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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/017,367	12/12/2001	Kevin K. Lehmann	PRU-101US	8107

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EXAMINER

PHAM, HOA Q

ART UNIT PAPER NUMBER

2877

DATE MAILED: 09/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/017,367	LEHMANN ET AL.	
	Examiner	Art Unit	
	Hoa Q. Pham	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-56 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) ____. | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figures 1-3 and 5A should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

2. The disclosure is objected to because of the following informalities: "Figure 6D" is not described in the "**BRIEF DESCRIPTION OF THE DRAWING**" section.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 25 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 25 recites the limitation "the tubular structure" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6. Claims 1-2, 6-8, 11-12, 17-22, 28-31, 45-49 and 53-56 are rejected under 35 U.S.C. 102(e) as being anticipated by Looock et al (US 2003/0007715 A1).

Regarding claims 1, 6, 18, 28, 48-49, 53-54, 56, Looock et al discloses a passive fiber optic ring (4) having a portion thereof exposed to the sample gas or liquid (abstract), a coherent source (2) of radiation, coupling means (page 4, left column, paragraph [0046]) for introducing a portion of the radiation emitted by the coherent source to the passive optic ring and receiving a portion of the radiation resonant in the passive fiber optic ring, a detector (8) for detecting a level of the radiation received by the coupling means and generating a signal responsive thereto; and a processor (10,12) coupled to the detector for determining the level of the trace species in the gas sample or liquid sample based on the signal generated by the detector (figure 1).

Regarding claim 2, wherein the level of the trace species is determined based on a rate of decay of the signal generated by the detector (page 6, right column [0068]).

Regarding claims 7-8, Looock teaches that the exposed portion is a cladding of the fiber (page 3, left column [0038]).

Regarding claims 11-12, Looock teaches that light source is a pulsed laser source (page 4, left column [0046] and [0047]).

Regarding claims 17 and 55, Looock et al teaches that an evanescent field of the radiation traveling within the fiber is exposed to the sample gas or sample liquid (page 2, left column, lines 1-3).

Regarding claims 19 and 20, Looock teaches that the passive resonant fiber is formed from one of fused silica, sapphire and fluoride based glass (page 3, right column [0041]) and the passive resonant fiber is formed from a hollow fiber ([0041]).

Regarding claims 21 and 22, the passive resonant fiber is single mode fibers and multi-mode fibers (see page 3, right column, [0041]).

Regarding claims 29 and 30, Looock teaches that the coherent source is in the wavelength region between visible and infrared region (page 2, left column, [0014]).

Regarding claim 31, Looock teaches that at least a portion of the passive fiber optic ring is disposed within the liquid sample for determining a presence of the trace species in the liquid sample (page 3, left column, [0038]).

Regarding claims 45-47, Looock teaches that the fiber optic ring is at least about 100 meter long, however, the invention is not limited thereto (page 3, right column, [0042]).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 3-5, 9-10, 13-16, 39-44, 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Looock et al in view of Lehmann (5,528,040) (of record).

Regarding claims 3 and 52, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a single optical coupler instead of two couplers, thus reduce the cost of the device.

Regarding claims 4-5, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include in Looock et al a filter placed in an optical path between the coupling means and the detector to selectively pass the received portion of radiation from the passive fiber optic loop to the detector if a certain wavelength is selected.

Regarding claims 9-10, Looock et al does not explicitly teach that the coherent source of radiation is an optical parametric generator; however, such a feature is known in the art as taught by Lehmann. Lehmann, from the same field of endeavor, teaches the use of an optical parametric generator (figure 1) for trace species detection. It would have been obvious to one of ordinary skill in the art to replace the light source of Looock et al by an optical parametric generator taught by Lehmann because they are function in the same manner. A substitution one for another is generally recognized as being within the level of ordinary skill in the art.

Regarding claims 13,15, and 16, Lehmann teaches the use of a continuous wave laser (20) (figure 1).

Regarding claim 14, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an optical fiber laser instead of a laser source because they are equivalent in function.

Regarding claims 39 and 40, Looock et al teaches that the test medium will have refractive index different from the refractive index of the fiber core (page 5, right column, [0059]). Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to choose an index of refraction of the fiber is greater than an index of refraction of the sample liquid.

Regarding claims 41-44, Looock et al discusses the loss within the passive fiber optic loop and connectors (page 5, right column, [0060] and page 7, left column, [0082]). Since the radiation loss in the optical fiber is significant problem, it would have been obvious to include in Looock et al means for controlling the radiation portion that enter the fiber optic ring.

Regarding claims 50-51, Lehmann teaches the use of a second optical detector (PD 2), which generates a trigger signal to the processor responsive to receiving radiation from the coherent source.

Double Patenting

9. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11

F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

10. Claims 1-56 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-6, 11-61 of copending Application No. 10/157,400. Although the conflicting claims are not identical, they are not patentably distinct from each other because the difference between the present claimed invention and the copending application is that the present claimed invention recites that the passive fiber optic ring having a portion thereof exposed to the sample gas or liquid, while the copending application recites that the sensor having a portion thereof exposed to the sample gas or liquid. However, the portion of the passive fiber optic ring can be broadly read as a portion of the sensor. Thus, they are not patentably distinct from each other.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.


11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Following references are relative to a ring down cavity

spectroscopy: Lehmann et al (6,172,824), Johnson (4,775,214), Largent (6,532,072), and Paldus et al (6,466,322).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoa Q. Pham whose telephone number is (703) 308-4808. The examiner can normally be reached on 6:30 AM to 5 PM, Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on (703) 308-4881. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



Hoa Q. Pham
Primary Examiner
Art Unit 2877

HP
September 4, 2003